

Patent Claims

1. A fuel cell system having at least one fuel cell and an intermediate electrical accumulator (7), which is connected to common supply connections (8) for an electrical consumer (9), characterized in that it comprises at least one sensor (10) for recording an operating parameter of the at least one fuel cell (4), a switch for electrically connecting and/or isolating the fuel cell with respect to the intermediate accumulator (7) and the supply connections (8), and a control circuit (11) for opening and closing the switch (6) as a function of the operating parameter recorded.
2. The fuel cell system as claimed in claim 1, characterized in that the switch (6) is a semiconductor switch, in particular a MOSFET.
3. The fuel cell system as claimed in claim 1 or 2, characterized in that the switch (6) and the fuel cell (4) are thermally coupled.
4. The fuel cell system as claimed in claim 3, characterized in that it comprises a stack of fuel cells (4), and in that the switch (6) is arranged at one end of the stack.
5. The fuel cell system as claimed in one of the preceding claims, characterized in that the control circuit (11) is designed to open and close the switch (6) on the basis of a single operating parameter.
6. The fuel cell system as claimed in one of the preceding claims, characterized in that the control circuit (11) is designed to open the switch (6) on the basis of a first operating parameter and to close it on the basis of a second operating parameter.
7. The fuel cell system as claimed in one of the preceding claims, characterized in that the control circuit (11) is designed in each instance to open the switch (6) in the event of a

first limit value being exceeded and to close the switch in the event of a second limit value being exceeded.

8. The fuel cell system as claimed in claims 1 to 6, characterized in that it includes a pulse generator circuit (16) for driving the switch (6) with pulses whose pulse duty factor is variable as a function of the at least one operating parameter.
9. The fuel cell system as claimed in claim 8, characterized in that the frequency of the pulses generated by the pulse generator circuit (16) is between 0.1 and 50 kHz.
10. The fuel cell system as claimed in one of the preceding claims, characterized in that the sensor (10) provided is a voltage sensor for recording the terminal voltage of the at least one fuel cell (4).
11. The fuel cell system as claimed in claim 10, characterized in that the control circuit (11) is designed to close the switch (6) in the event of an upper limit voltage being exceeded and/or to open the switch in the event of a lower limit voltage being undershot.
12. The fuel cell system as claimed in one of the preceding claims, characterized in that the sensor provided is an internal resistance sensor for recording the internal resistance of the at least one fuel cell.
13. The fuel cell system as claimed in claim 12, characterized in that the control circuit (11) is designed to close the switch (6) in the event of an upper limit resistance being exceeded and/or to open the switch in the event of a lower limit resistance being undershot.

14. The fuel cell system as claimed in one of the preceding claims, characterized in that the sensor (10) provided is a pressure sensor for recording the hydrogen partial pressure of the at least one fuel cell.
15. The fuel cell system as claimed in claim 14, characterized in that the control circuit (11) is designed to close the switch (6) in the event of an upper limit pressure being exceeded and/or to open the switch in the event of a lower limit pressure being undershot.
16. The fuel cell system as claimed in one of the preceding claims, characterized in that a valve whose throughput is regulated by the control circuit on the basis of the recorded operating parameter is arranged in at least one operation gas feed line.
17. The fuel cell system as claimed in one of the preceding claims, characterized in that a reformer (3) as hydrogen source is connected upstream of the at least one fuel cell.
18. The fuel cell system as claimed in claim 17, characterized in that throughput of the reformer (3) is regulated by the control circuit (11) on the basis of the recorded operating parameter.